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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/029,730	COHEN ET AL.	
	Examiner	Art Unit	
	Mia M. Thomas	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 27 December 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Section IV.C, reads as follows:

> While abstract ideas, natural phenomena, and laws of nature are not eligible for patenting, methods and products employing abstract ideas, natural phenomena, and laws of nature to perform a real-world function may well be. In evaluating whether a claim meets the requirements of section 101, the claim must be considered as a whole to determine whether it is for a particular application of an abstract idea, natural phenomenon, or law of nature, rather than for the abstract idea, natural phenomenon, or law of nature itself.
>
> For claims including such excluded subject matter to be eligible, the claim must be for a practical application of the abstract idea, law of nature, or natural phenomenon. Diehr, 450 U.S. at 187, 209 USPQ at 8 ("application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."); Benson, 409 U.S. at 71, 175 USPQ at 676 (rejecting formula claim because it "has no substantial practical application").
>
> To satisfy section 101 requirements, the claim must be for a practical application of the Sec. 101 judicial exception, which can be identified in various ways:
>
> > The claimed invention "transforms" an article or physical object to a different state or thing.
> >
> > The claimed invention otherwise produces a useful, concrete and tangible result, based on the factors discussed below.

2. Claims 1-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 1 recites functional descriptive material. However, the process/method itself merely manipulates data or an abstract idea, or merely solves a mathematical problem without a limitation to a practical application. A practical application exists if the *result* of the claimed invention is "useful, concrete and tangible" (with the emphasis on "result")(Guidelines, section IV.C.2.b). A "useful" result is one that satisfies the utility requirement of section 101, a "concrete" result is one that is "repeatable" or "predictable", and a "tangible" result is one that is "real", or "real-world", as opposed to "abstract" (Guidelines,

section IV.C.2.b)). By way of example, Claim 1 merely manipulates data without ever producing a useful, concrete and tangible result. As best understood by the Examiner, when read in light of the specification, Claim 1 identifies a first element, determines reference coordinates for that element, stores them, repeats that application for another (second) element and replaces the first element with a second element if a certain equation is satisfied based upon a predetermined threshold and retains the first element if the conditions are not satisfied. There is no output. What is the final result of this mere manipulation of elements based upon a mathematical condition to be satisfied? The identification of these elements as well as the operation of this equation can be repeated numerous times with respect to any processor. However, claim 1 does not recite tangible or concrete use for these claimed elements. There is no result to the manipulation of these claimed elements.

In order to for the claimed product to produce a "useful, concrete and tangible" result, recitation of one or more of the following elements is suggested:

- The manipulation of data that represents a physical object or activity transformed from outside the computer.
- A physical transformations outside the computer, for example in the form of pre or post computer processing activity.
- A direct recitation of a practical application;

It is the result that is the focus. If the result has a real world practical application/use, then the test has been satisfied. The claim need not include the uses to which the result is ultimately put, just the result itself. Applicant is advised to provide a written explanation of how and why the claimed invention (either as currently recited or as amended) produces a useful, concrete and tangible result. **Appropriate correction is required.**

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 8-17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 8 for example, the phrase "substantially" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner is unclear as to what threshold of coordinates is associated with the new coordinates. If the determination of the new reference coordinates is substantially toward or away from a camera, what is the exact number(s) that the coordinates are going to have? How can one determine the values of the Euclidean distance (in this example) and then compare those values to a predetermined threshold if there is not "one single value" for the new coordinates. Examiner has interpreted substantially toward or away from a camera to mean...somewhere in a certain range. If the claimed limitations require a new coordinate be found, where and how will those coordinates be found if they are substantially close or far from a camera? **Appropriate correction is required.**

Examiner's Suggestions

5. With respect to applicant's drawings, the applicant is discouraged from using claim language in both the summary and in the drawings. Since the limitations of the claims are most effortlessly understood by one of ordinary skill in the art, the "layman" would not be apprised of the requisite degree of knowledge and understanding to comprehend the invention by simply reviewing the drawings of this application. Applicant straightforwardly copies the claimed steps associated with this invention into the drawings, which is not improper, however, it does not

clearly suggest that the invention can be interpreted without reading the specification as best demonstrated at Figure 5B.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-5,8-10,12,18-20,25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steffens et al. (US 6,301,370 B1) in combination with Tomitaka (US 5,355,163).

Regarding Claim 1: Steffens discloses a method for storing a trajectory of tracked objects in a video ("In an alternative embodiment of the invention, the object is in a sequence of images and the step of detecting an object further includes tracking the object between image frames based on a trajectory associated with the object.." at column 2, line 6), comprising the steps of:

(a) identifying objects in a first video frame (Refer to Figure 5, frame associated with the video stream at the top of the page and to the left);

(b) determining first reference coordinates (x(ref)i, y(ref)i) for each of said objects identified in step (a) in the first video frame (Refer to Figure 5, numeral 50; further at column 5, line 46);

(c) storing the first reference coordinates (x(ref)i, y(ref)i) (Refer to Figure 2, numeral 28 and numeral 32);

(d) identifying said objects in a second video frame (Refer to Figure 5, frame associated with the video stream at the top of the page and to the right); Specifically with reference to the overall invention, "FIG. 3 is a series of images for showing detection, finding and identification

processes of the recognition process of FIG. 1." at column 2, line 28); (e) determining current reference coordinates (x(new)i, y(new)i) of said objects in said second video frame (Refer to Figure 5, numeral 50; further at column 5, line 46. By way of example, refer to Figure 9, numeral 154);

and (f) storing the current reference coordinates of a particular object in an object trajectory list (Refer to Figure 7, numeral 84) and replacing the first reference coordinates (x(ref)i, y(ref)i) with the current reference coordinates (x(new)i, y(new)i) (Refer to Figure 7, numeral 86);

wherein (epsilon) is a predetermined threshold amount ("The threshold is selected such that the relatively time consuming graph matching image analysis is performed only if sufficient change in the image justifies a renewed in depth analysis." at column 5, line 34),

and retaining the first reference coordinates (x(ref)i, y(ref)i) for comparison with subsequent video frames when said condition is not satisfied (Refer to Figure 7, numeral 88 and numeral 90).

Steffens does not specifically disclose if the following condition for the particular object is satisfied: $\| [((x(new)i, y(new)i) - (x(ref)i, y(ref)i)] \|^2 < \acute{\varepsilon}$(epsilon).

Tomitaka teaches if the following condition for the particular object is satisfied:

$\| [((x(new)i, y(new)i) - (x(ref)i, y(ref)i)] \|^2 < \acute{\varepsilon}$(epsilon) (Refer to Figure 6, numeral SP4; "calculate Euclidean distance between reference feature patter and detection feature pattern concerning brightness and hue making the sum as jsmall, jmiddle, jlarge.").

Steffens and Tomitaka are combinable because they are in the same field of object tracking in video images (frames).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to define the Euclidian distance to define the distance between new coordinates and reference coordinates and then taking that value and comparing it to a predetermined threshold.

The suggestion/motivation for doing to would have been to decrease computational complexity with regards to defining the distance as related to the reference coordinates and new coordinates of this invention.

Therefore, it would have been obvious to one of ordinary skill in the art to add together the process of storing trajectory tracked objects as disclosed by Stephens with the distance formula as taught by Tomitaka to obtain the invention as specified in Claim 1.

Regarding Claim 2:

Tomitaka teaches: (g) repeating steps (e) and (f) for all video frames subsequent to said second video frame in a video sequence (Refer to Figure 7, object "FMX2 and FMX3") so as to update the storage area with additional coordinates and to update the current reference coordinates with new values each time said condition in step (f) is satisfied (Refer to Figure 11, numeral SP13-SP17).

Regarding Claim 3: Steffens discloses wherein when said condition step (f) is not satisfied, storing the current coordinates of the particular object as final coordinates of a final frame of said subsequent video frames in the video sequence (By way of example, refer to Figure 21;

For clarity and further explanation, see column 14, lines 41-61. According to Figure 21, an original image is obtained at numeral 198, then at numeral 218 after numerous comparisons and multiple new coordinates as shown at numerals 202-216, a output of the pose with the highest equivalence is shown.).

Regarding Claim 4: Steffens discloses although said condition in step (f) has not been satisfied, storing the current coordinates as final coordinates before the particular object disappears and a trajectory ends from the subsequent video frames in the video sequence ("In an alternative embodiment of the invention, the object is in a sequence of images and the step of detecting an object further includes tracking the object between image frames based on a trajectory associated with the object. Also, the step of locating the nodes includes tracking the nodes between image frames and reinitializing a tracked node if the node's position deviates beyond a predetermined position constraint between image frames." at column 2, line 6).

Regarding Claim 5: Steffens discloses wherein the object trajectory list for the particular object stored in step (f) comprises a temporary memory of a processor (Refer to), and (h) writing the object trajectory list to permanent storage from all the coordinates stored in the temporary memory after all the frames of the video sequence have been processed by steps (a) to (g) (Refer to Figure 7, numeral 84).

Regarding Claim 8: As best understood by the Examiner, Steffens discloses wherein determination of the current reference coordinates (x(new)i, y(new)i) in step (e) includes size tracking of the objects moving one of (i) substantially directly toward, and (ii) substantially directly away from a camera by using a box bounding technique ("In an alternative embodiment

of the invention, the object is in a sequence of images and the step of detecting an object further includes tracking the object between image frames based on a trajectory associated with the object. Also, the step of locating the nodes includes tracking the nodes between image frames and reinitializing a tracked node if the node's position deviates beyond a predetermined position constraint between image frames. Additionally, the image frames may be stereo images and the step of detecting may include detecting convex regions which are associated with head movement." at column 2, line 6-16).

Regarding Claim 9: As best understood by the Examiner, Steffens discloses: wherein determination of the current reference coordinates (x(new)i, y(new)i) in step (e) includes size tracking of the objects moving one of (i) substantially directly toward, and (ii) substantially directly away from a camera by using a box bounding technique (Refer to Figure 4, "Bounding Box and Trajectory"; "The head detection process places a bounding box around the detected head thus reducing the image region that must be processed by the landmark finding process. Based on data received from the head detection and tracking process, a preselector process 16 selects the most suitable views of the image material for further analysis and refines the head detection to center and scale the head image." at column 3, line 60).

Regarding Claim 10: As best understood by the Examiner, Steffens discloses wherein determination of the current reference coordinates (x(new)i, y(new)i) in step (e) includes size tracking of the objects (By way of example, refer to Figure 9, numeral 154) moving one of (i) substantially directly toward, and (ii) substantially directly away from a camera by using a box bounding technique (Refer to Figure 4, numeral 42-"Bounding Box and Trajectory").

Regarding Claim 12: Steffens discloses wherein the determination of whether current reference coordinates has reached a threshold (epsilon) includes a combining of the box bounding technique and differences in (x(new)i, y(new)i) and (x(ref)i, y (ref)i) (Refer to Figure 7, numeral 86-92; further at column 31-45. These columns and lines associate a common means for determining a minimal threshold based upon the head tracking (box bounding technique) and threshold associated with reference and new coordinates).

Regarding Claim 18: Steffens discloses wherein the predetermined threshold amount (epsilon) of the particular object is dynamically computed according to one of average object velocity, size of the particular object, and designation of a degree of importance of the particular object (Computation of the claimed threshold is dynamically computed at Figure 1, numeral 30. The threshold is computed according to average object velocity at column 5, lines 31-37, "Another advantageous use of head motion detection uses graph matching which is invoked only when the number of pixels affected by image motion exceeds a minimal threshold. The threshold is selected such that the relatively time consuming graph matching image analysis is performed only if sufficient change in the image justifies a renewed in depth analysis.").

Regarding Claim 19: Steffens discloses A system (Refer to Figure 4) for storage of the trajectory of tracked objects in a video, ("...is embodied in an apparatus, and related method, for detecting and recognizing an object in an image frame." at abstract; refer to Figure 4 "bounding box and trajectory") comprising: a processor (Refer to Figure 2, numeral 30); a video input for providing images to the processor (Refer to Figure 2, numeral 26); a video content analysis module for tracking coordinates of objects in the images provided to the processor (Refer to Figure 2, numeral 34, specifically with reference to Figure 4, numeral 42);

and means for storage of object trajectories (The object trajectories are previously stored at Figure 7, numeral 84); wherein the video content module assigns a reference coordinate value to each object identified in a first reference frame of the images (Refer to Figure 2, numeral 34; "The new position is checked to determine whether the new estimated position belongs to an already existing trajectory (block 84) assuming spatio-temporal continuity. For every position estimate found for the frame acquired at time t, the algorithm looks (block 86) for the closest head position estimate that was

determined for the previous frame at time t-1 and connects it (block 88)." at column 6, line 32), and updates the reference coordinate value to a value of a subsequent frame only when an amount of motion of the object in the subsequent frame relative to the first frame exceeds a threshold from the reference coordinate value (Refer to Figure 7, numeral 86 with specific reference to the "yes" and "no" options that will determine (solve) if the reference coordinated exceed the predetermined threshold value. "A monocular image stream of at least 10 frames per second may be analyzed for image motion, particularly if the image stream includes only a single person that is moving in front of a stationary background." at column 5, line 16).

Regarding Claim 20: Steffens discloses wherein the video content analysis module initiates storage of the reference coordinates of the subsequent frame as part of a trajectory path of the motion of the particular object (Refer to Figure 2, numeral 34).

Regarding Claim 25: Steffens discloses a method for storing a trajectory of tracked objects in a video ("In an alternative embodiment of the invention, the object is in a sequence of images and the step of detecting an object further includes tracking the object between image frames based on a trajectory associated with the object.." at column 2, line 6), comprising the steps of:

(a) identifying objects in a first video frame (Refer to Figure 5, frame associated with the video stream at the top of the page and to the left; specifically by way of example, see Figure 3);

(b) determining first reference coordinates (x(ref)i, y(ref)i) for each of said objects identified in step (a) in the first video frame (Refer to Figure 5, numeral 50; further at column 5, line 46);

(c) storing the first reference coordinates (x(ref)i, y(ref)i) (Refer to Figure 2, numeral 28 and numeral 32);

(d) identifying said objects in a second video frame (Refer to Figure 5, frame associated with the video stream at the top of the page and to the right); Specifically with reference to the overall invention, "FIG. 3 is a series of images for showing detection, finding and identification processes of the recognition process of FIG. 1." at column 2, line 28);

(e) determining current reference coordinates (x(new)I, y(new)i) of said objects in said second video frame (Refer to Figure 5, numeral 50; further at column 5, line 46);

and (f) storing the current reference coordinates of a particular object in an object trajectory list (Refer to Figure 7, numeral 84) and replacing the first reference coordinates (x(ref)i, y(ref)i) with the current reference coordinates (x(new)I, y(new)i) (Refer to Figure 7, numeral 86)

wherein .epsilon. is a predetermined threshold amount ("The threshold is selected such that the relatively time consuming graph matching image analysis is performed only if sufficient change in the image justifies a renewed in depth analysis." at column 5, line 34), and retaining the first reference coordinates (x(ref)i, y(ref)i) for comparison with subsequent video frames when said condition is not satisfied (Refer to Figure 7, numeral 88 and numeral 90).

Tomitaka teaches

if the following condition for the particular object is satisfied: $|x(new)i - x(ref)i| + |y(new)i - y(ref)i| \geq \varepsilon$(epsilon); (Refer to Figure 6, numeral SP4; "calculate Euclidean distance between reference feature patter and detection feature pattern concerning brightness and hue making the sum as jsmall, jmiddle, jlarge.").

Steffens and Tomitaka are combinable because they are in the same field of object tracking in video images (frames).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to define the Euclidian distance to define the distance between new coordinates and reference coordinates and then taking that value and comparing it to a predetermined threshold.

The suggestion/motivation for doing to would have been to decrease computational complexity with regards to defining the distance as related to the reference coordinates and new coordinates of this invention.

Therefore, it would have been obvious to one of ordinary skill in the art to add together the process of storing trajectory tracked objects as disclosed by Stephens with the distance formula as taught by Tomitaka to obtain the invention as specified in Claim 25.

8. Claims 6,7,11,13-17,21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steffens et al. (US 6,301,370 B1) in combination with Tomitaka (US 5,355,163)as applied to the claims above, and further in view of Crabtree et al. (US 6,185,314 B1).

Regarding Claim 6:

The combination of Steffens and Tomitaka discloses all the claimed elements as listed above. The combination of Steffens and Tomitaka does not specifically disclose [the] permanent storage comprises at least one of a magnetic disk, optical disk, magneto-optical disk, and tape

Crabtree teaches wherein the permanent storage comprises at least one of a magnetic disk, optical disk, magneto-optical disk, and tape (Refer to Figure 1, numeral 135; "The individual functions of the tracking system are preferably implemented by way of a software program that may be installed in the memory 135 from another memory/storage medium, such as a CD-ROM, floppy disk(s), hard disk, etc." at column 5, line 3).

Steffens, Tomitaka and Crabtree are combinable because they are in the same field of object tracking and matching in a video frame/image. (see title and abstract of each invention).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to utilize a permanent storage that comprises at least one of a magnetic disk, optical disk, magneto-optical disk, and tape.

The suggestion/motivation for doing so would have been to keep and secure data and/or its contents regardless if the power is turned off or if the storage device is moved to another computer or imaging device.

Therefore, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as disclosed by the combination of Steffens and Tomitaka with the permanent storage device of Crabtree to obtain the invention as specified in Claim 6.

Regarding Claim 7: Crabtree teaches wherein the permanent storage is arranged in a network server ("...or it may be downloaded from an internet site, or from an on-line service for installation into the memory 135." at column 5, line 7).

Regarding Claim 11: The combination of Steffens and Tomitaka discloses all the claimed elements as listed above.

The combination of Steffens and Tomitaka does not specifically disclose the box bounding technique [wherein] (i) determining a reference bounding box (w(ref), h(ref)) of the particular object, wherein w represents a width, and h represents a height of the particular object (ii) storing a current bounding box (wi, hi) if either of the following conditions in sub-steps (ii) (a) and (ii) (b) are satisfied: (ii) (a) $|wi - w(ref)i| > \partial_w$; (ii) (b) $|hi - h(ref)i| > \partial_h$.

As best understood by the Examiner, Crabtree discloses wherein the box bounding technique (Refer to Figure 10, numeral 300) comprises: (i) determining a reference bounding box (w(ref), h(ref)) of the particular object, wherein w represents a width, and h represents a height of the particular object (Refer to column 7, lines 27-32); (ii) storing a current bounding box (wi, hi) (Refer to Figure 1, numeral 135) if either of the following conditions in sub-steps (ii) (a) and (ii) (b) are satisfied: (ii) (a) $|wi - w(ref)i| > \partial_w$; (ii) (b) $|hi - h(ref)i| > \partial_h$ (Refer to column 8, lines 43-67 and column 9, lines 1-14. These lines explain the corresponding width and height values as they are respective to regions or cluster of objects associated with the video frames).

Steffens, Tomitaka and Crabtree are combinable because they are in the same field of object tracking and matching in a video frame/image. (see title and abstract of each invention).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to utilize a box bounding technique with the claimed elements as taught by Crabtree in the rejection of Claim 11.

The suggestion/motivation for doing so would have been to organize the coordinates and sequences affiliated with or drawn to any number of the video frames and/or objects associated with the analysis of the width and height of the object in query.

Therefore, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as disclosed by the combination of Steffens and Tomitaka with the box bounding technique of Crabtree to obtain the invention as specified in Claim 11.

Regarding Claim 13: As best understood by the Examiner, Crabtree discloses, wherein the box bounding technique (Refer to Figure 10, numeral 300) comprises: (i) determining a reference bounding box (w(ref), h(ref)) of the particular object, wherein w represents a width, and h represents a height of the particular object (Refer to column 7, lines 27-32); (ii) storing a current bounding box (wi, hi) (Refer to Figure 1, numeral 135) if either of the following conditions in sub-steps (ii) (a) and (ii) (b) are satisfied: (ii) (a) $|wi - w(ref)i| > \partial_w$; (ii) (b) $|hi - h(ref)i| > \partial_h$.

(Refer to column 8, lines 43-67 and column 9, lines 1-14. These lines explain the corresponding width and height values as they are respective to regions or cluster of objects associated with the video frames).

The motivation and suggestion for combination of these elements equally resembles the motivation/suggestion for combination at Claim 12. Therefore, Claim 13 is rejected equally as disclosed at Claim 12. For clarity, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as disclosed by the combination of Steffens and Tomitaka with the box bounding technique of Crabtree to obtain the invention as specified in Claim 13.

Regarding Claim 14: As best understood by the Examiner, Crabtree discloses, wherein the box bounding technique (Refer to Figure 10, numeral 300) comprises: (i) determining a reference bounding box (w(ref), h(ref)) of the particular object, wherein w represents a width, and h represents a height of the particular object (Refer to column 7, lines 27-32); (ii) storing a current bounding box (wi, hi) (Refer to Figure 1, numeral 135) if either of the following conditions in sub-steps (ii) (a) and (ii) (b) are satisfied: (ii) (a) $|wi - w(ref)i| > \partial_w$; (ii) (b) $|hi - h(ref)i| > \partial_h$. (Refer to column 8, lines 43-67 and column 9, lines 1-14. These lines explain the corresponding width and height values as they are respective to regions or cluster of objects associated with the video frames).

The motivation and suggestion for combination of these elements equally resembles the motivation/suggestion for combination at Claim 12. Therefore, Claim 14 is rejected equally as disclosed at Claim 12. For clarity, it would have been obvious to one of ordinary skill in the art to

combine the claimed elements as disclosed by the combination of Steffens and Tomitaka with the box bounding technique of Crabtree to obtain the invention as specified in Claim 14

Regarding Claim 15: As best understood by the Examiner, Crabtree discloses, wherein the box bounding technique (Refer to Figure 10, numeral 300) comprises: (i) determining an area a= w(ref)i * h(ref)i of a reference bounding box (w(ref)i, h(ref)i) of the particular object, wherein w represents a width, and h represents a height of the particular object (Refer to column 7, lines 27-32); and (ii) storing coordinates of a current bounding box (wi, hi) (Refer to Figure 1, numeral 135) if a change in area (delta)a of the current bounding box is greater than a predetermined amount (Refer to column 8, lines 43-67 and column 9, lines 1-14. These lines explain the corresponding width and height values as they are respective to regions or cluster of objects associated with the video frames).

The motivation and suggestion for combination of these elements equally resembles the motivation/suggestion for combination at Claim 12. Therefore, Claim 15 is rejected equally as disclosed at Claim 12. For clarity, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as disclosed by the combination of Steffens and Tomitaka with the box bounding technique of Crabtree to obtain the invention as specified in Claim 15.

Regarding Claim 16: As best understood by the Examiner, Crabtree discloses, wherein the box bounding technique (Refer to Figure 10, numeral 300) comprises: (i) determining an area a= w(ref)i * h(ref)i of a reference bounding box (w(ref)i, h(ref)i) of the particular object, wherein w represents a width, and h represents a height of the particular object (Refer to column 7, lines 27-32); and (ii) storing coordinates of a current bounding box (wi, hi) if a change in area (delta)a

of the current bounding box is greater than a predetermined amount (Refer to column 8, lines 43-67 and column 9, lines 1-14. These lines explain the corresponding width and height values as they are respective to regions or cluster of objects associated with the video frames).

The motivation and suggestion for combination of these elements equally resembles the motivation/suggestion for combination at Claim 12. Therefore, Claim 16 is rejected equally as disclosed at Claim 12. For clarity, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as disclosed by the combination of Steffens and Tomitaka with the box bounding technique of Crabtree to obtain the invention as specified in Claim 16.

Regarding Claim 17: As best understood by the Examiner, Crabtree discloses, wherein the box bounding technique (Refer to Figure 10, numeral 300) comprises: (i) determining an area a= w(ref)i * h(ref)i of a reference bounding box (wi, hi) of the particular object, wherein w represents a width, and h represents a height of the particular object (Refer to column 7, lines 27-32); and (ii) storing coordinates of a current bounding box (wi, hi) if a change in area (delta)a of the current bounding box is greater than a predetermined amount (Refer to column 8, lines 43-67 and column 9, lines 1-14. These lines explain the corresponding width and height values as they are respective to regions or cluster of objects associated with the video frames).

The motivation and suggestion for combination of these elements equally resembles the motivation/suggestion for combination at Claim 12. Therefore, Claim 17 is rejected equally as disclosed at Claim 12. For clarity, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as disclosed by the combination of Steffens and Tomitaka with the box bounding technique of Crabtree to obtain the invention as specified in Claim 17.

Regarding Claim 21:

Crabtree teaches wherein the video content module includes a box-bounding function for identifying a width and height of the particular objects (Refer to Figure 2, numeral 300; "Width. The bounding box of the region cluster must be greater than a minimum width and less than a maximum width. Height. The bounding box of the region cluster must be greater than a minimum height and less than a maximum height." at column 7, line 17).

Regarding Claim 22:

Crabtree teaches wherein the video content analysis module updates reference coordinates when a predetermined change in one of size and area of the particular object has been detected by the box bounding (Refer to Figure 2, numeral 500; "Each arc in the graph has an associated weight which describes the correspondence, degree of match, between an object at time t and time t+1. The weight of each arc is determined by the region corresponder 500 (referred to hereinafter) and/or the split/merge resolver 700 (referred to hereinafter)." at column 6,line 50).

Regarding Claim 23: Steffens discloses wherein the video input comprises a camera ("A satisfactory imaging system is the Matrox Meteor II available from Matrox™ (Dorval, Quebec, Canada; www.matrox.com) which generates digitized images produced by a conventional CCD camera and transfers the images in real-time into the memory at a frame rate of 30 Hz." at column 4, line 49).

Regarding Claim 24: Steffens discloses wherein the video input comprises one of a video server, digital video disk, and videotape ("The image processing system 12 for implementing the

face recognition processes of the invention is shown in FIG. 2. The processing system receives a person's image from a video source 26 which generates a stream of digital video image frames." at column 4, line 43).

Specification

9. The disclosure is objected to because of the following informalities: At page 10 of this application, there are references to be incorporated by reference, however, there are missing serial numbers associated with these references. At lines 7 and 9, it is important that applicant incorporate the correct and valid application serial numbers as it corresponds to the disclosure.

Appropriate correction is required.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6154131	US 6757008	US 6707486	
US 6580811	US 5809161	US 2004/0062441	US 5495539

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is 571-270-1583. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mia M Thomas
Examiner
Art Unit 2624

VIKKRAM BALI
PRIMARY EXAMINER